ENHANCED ACETYLENE EMISSION NEAR THE NORTH POLE OF JUPITER

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The presentation by Drossart et al. is largely contained in a paper which has been submitted to Icarus. The abstract of that paper is reproduced here.

We report observations of acetylene emission lines near 13.3 \( \mu m \) on Jupiter recorded at the NASA Infrared Telescope Facility in July, 1984. A strong enhancement in the intensity of the R\(_7\) line of the \( v_5 \) band was recorded within a well-localized region coincident with the southern extension of the footprint of the Io magnetic lines (Dessler, 1983) and with previous observations of localized enhanced emission of CH\(_4\) lines (Caldwell et al., 1980, Icarus 44, 667-675). The line intensity was fairly constant outside this 'bright spot.' Moreover, weak lines of the hot bands \( 2v_5 - v_5 \), and \( (v_4 + v_5) - v_5 \) were observed within the bright spot. From the field of view and the precision of the pointing, the zone of activity of the bright spot is found to be: latitude = 59 ± 10 deg and longitude = 178 ± 10 deg (System III, 1965). The location of the spot was found to be constant over a 3 day period. Two interpretations are proposed to explain these observations by (1) a variation of the C\(_2\)H\(_2\) abundance and (2) an alteration of the thermal profile in the bright spot. Either may result from precipitation of charged particles near and below the Jovian homopause.